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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/723,327

11/26/2003

Richard L. Cohen

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08/04/2006

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EXAMINER

BAUER, SCOTT ALLEN

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/723,327

Applicant(s)

COHEN, RICHARD L.

Examiner

Scott Bauer

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 & 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on 19 MAY 2006. These drawings are accepted.

The Examiner agrees with Applicant's traversal of the drawing objection made under 37 CFR 1.83(a) and as such, the objection has been removed.

### ***Claim Objections***

2. The amendment to the specification and claims has overcome the claim objections of claims 3-7, 13-17 and all objections have been removed. The examiner agrees with the traversal of the objection in regard to claims 3-5 & 13-15 as being indefinite and the objection has been withdrawn.

## **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 & 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stapelfeld et al. (US 6,360,698) in view of Luu. (US 5,625,521) and "RF Ground Systems." Radio Works Reference Catalog 05 FEB 1997 78. 24 July 06  
<http://radioworks.com/nbgnd.html> (herein referred to Radio Works).

3. With regard to Claims 1, 2, 11 & 12, Stapelfeld, in Figure 2, teaches an electronic impulse circuit for an animal control system having a power circuit (120), and a transmitter having two outputs (122) to a loop antenna having two inputs (column 1 lines 16-21). The circuit taught by Stapelfeld also teaches a loop impulse protection circuit (128) interconnecting one input of the loop antenna to the antenna ground together with a heavy ground interconnecting the power circuit ground and the loop antenna ground (column 3 lines 57-63). Figure 3 depicts the "heavy" ground taught by Stapelfeld. The figure shows the surge protector (105) and transmitter, grounded by a grounding wire (107) (column 4 lines 23-25). Figure 3 also demonstrates that the grounding wire (107) is a physical connection to "earth ground". Stapelfeld further discloses that the output of the transmitter circuitry of Figure 2 is connected to power ground through the impulse protection circuit.

Stapelfeld et al. does not teach that the power circuit contains a line, neutral and ground, or a power impulse protection circuit interconnecting power circuit line and neutral to power circuit ground or a heavy ground having a relatively large cross-sectional area to withstand large lightning surges and a relatively short length to reduce impedance of the interconnection to ground to a minimum value.

Luu, in Figure 9, teaches a surge protection circuit for protecting against voltage surges when lightning strikes an antenna (column 7 lines 52-54). The surge protection circuit contains a line (240), neutral (242) and ground (244) line protected by a power impulse protection circuit (246, 248 & 250).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Stapelfeld et al. with Luu by protecting the power circuit of Stapelfeld with the metal oxide varistors (MOV'S) taught by Luu for the purpose of protecting the animal control system from transient voltage surges found on a common household outlet (Luu column 1 lines 10-15). In the circuit taught by Stapelfeld et al. in view of Luu, the MOVs would be placed inside the power converter (109) located in Stapelfeld's figure 3, prior to the power being converter from AC to DC.

Radio Works discloses an inter-circuit RF ground system wherein a heavy ground is used to shunt lightning surges from an antenna to ground, the heavy ground has a relatively large cross-sectional area capable of withstanding large lightning surges and a relatively short length to reduce impedance of the interconnection to ground to a minimum value (pages 8 & 9 under "Station RF Ground").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Stapelfeld et al. with Radio Works, by making the ground of Stapelfeld et al. wide and short as taught by Radio Works for the purpose of ensuring that the ground will shunt both DC and RF surges.

4. With regard to Claims 3-5 & 13-15, Stapelfeld et al. in view of Luu and Radio Works discloses the impulse circuit of Claim 1 & 11. Stapelfeld et al. further discloses that an antenna coil is mounted on a circuit board on which is also mounted associated capacitors (column 5, lines 66 & 67 and column 6 lines 1-4). Stapelfeld in Figure 2,

Art Unit: 2836

further discloses that the heavy ground is connected to the one input of the loop antenna.

Stapelfeld et al. in view of Luu and Radio Works does not disclose that the impulse protection circuit for the antenna or the heavy ground are mounted on the circuit board nor does Stapelfeld disclose that the circuit board has a maximum trace width for impulse protection.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to place the protection circuitry and heavy ground on a circuit board to provide a support region for mounting and interconnecting the protection circuitry and heavy ground, and to provide the board with as large of traces as possible because it was known in the art at the time the invention was made, that larger traces can withstand higher voltages and currents than smaller traces. A printed circuit board would inherently provide traces large enough to withstand operating currents and voltages for the circuit board to be functional.

5. With regard to Claims 6, 7, 16 & 17, Stapelfeld et al. in view of Luu and Radio Works teaches the impulse circuit of Claim 3 & 13 wherein the impulse protection circuit and heavy ground (107) are connected by wires.

Stapelfeld in view Luu and Radio Works does not disclose that the wire that forms part of the impulse protection circuit or the heavy ground interconnection to one input of the loop antenna, is a 1-2 inch length of 16-12 gauge wire. Stapelfeld further

Art Unit: 2836

does not disclose that the impulse protection circuit or ground interconnection comprises a 1-2 length of 18-10 gauge wire.

However, it has been decided that, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to use a large gauge of wire for the protection circuitry since it was known in the art at the time the invention was made, that larger gauge wire could withstand higher voltages and currents than smaller wires. Lightning protection circuitry would inherently provide wire thick enough to withstand the high currents and voltages that the circuit is designed to dissipate.

6. Claims 8, 9, 18 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stapelfeld et al. in view of Luu and Radio Works as applied to Claims 1 & 11 above and further in view of Dix Jr. (US 4,996,945).

7. With regard to Claim 8 & 18, Stapelfeld et al. in view of Luu and Radio Works discloses the impulse protection circuit of Claim 1 & 11. Stapelfeld further discloses in Figure 2, that the one input of the loop antenna includes a back-to-back diode surge

Art Unit: 2836

arrestor (128) bridging the one input of the loop antenna to heavy ground. (column 3, lines 57-63).

Stapelfeld et al. in view of Luu and Radio Works does not disclose that a gas tube surge arrestor is used to bridge the antenna input with heavy ground.

Dix Jr., in Figure 2, discloses an electronic animal control system that uses both back to back Zener diodes (55) and a gas tube (63) as threshold voltage conduction. Both devices shunt power to ground in the event of a voltage surge. (column 5 lines 10-11 and lines 51-54).

Stapelfeld et al. in view of Luu and Radio Works discloses the claimed invention except that the impulse protection device is a back-to-back Zener diode instead of a gas tube. Dix Jr. shows that a gas tube is an equivalent structure known in the art. Therefore, because the two surge arrestors were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the gas tube for the back to back Zener diode for the purpose of preventing leakage current from escaping through the diodes.

8. With regard to Claims 9 & 19, Stapelfeld in view of Luu, Radio Works and Dix Jr. teach the impulse circuit of Claim 8. Stapelfeld et al., in Figure 2, further teaches that the impulse protection circuit of the transmitter output includes a resistance (470) to the gas tube.



***Response to Arguments***

9. Applicant's arguments with respect to claims 1-9 & 11-20 have been considered but are moot in view of the new ground(s) of rejection.

The Examiner submits Minchey (WO 01/05164) and DiBene, II et al. (US 6,356,448) in response to Applicant's request for prior art to support the reliance on common knowledge in the rejection of claims 3-5 & 13-15. The rejection relied on common knowledge that a larger traces can withstand voltages and currents than smaller traces and that a printed circuit board would necessarily need to provide traces large enough to with stand operating currents and voltages.

Minchey teaches a circuit board for connecting surge protectors wherein the traces have a width and a copper content sufficient to carry large current surges from induced power signals, by way of example, from a lightning strike, without breaking down (Abstract).

DiBene, II et al. discloses an inter-circuit encapsulated packing for power delivery wherein heavy power and ground traces are placed on a circuit board to enable low electrical resistance and that by placing the traces in close proximity to a device and connector, the traces can provide an even great path of low resistance (column 7 lines 39-57).

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Das et al. (US 5,189,697) discloses a line interface circuit wherein a lightning strike is shunted to a heavy ground bus bar to prevent the strike from damaging internal circuit components.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bauer whose telephone number is 571-272-5986. The examiner can normally be reached on M-F 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SAB  
25 JUL 06



**CHAU N. NGUYEN**  
**PRIMARY EXAMINER**